

Applying Nutrients to Your Landscape

By Jerry Clark, Agriculture Agent

Healthy lawns, gardens, and landscapes add to the beauty and value of a home or property. They also keep our lakes and streams clean by allowing rainwater to filter into the soil rather than running into storm sewers. Maintaining healthy gardens and landscapes, however, often requires the use of organic or synthetic fertilizers. Improper fertilizer use can cause water pollution. Many fertilizer materials, including leaves and grass clippings, contain nitrogen and phosphorus. When these nutrients wash into lakes and streams they promote unsightly algae blooms and aquatic weed growth, lower dissolved oxygen levels in the water, and may release ammonia – which is toxic to fish.

Proper fertilization of a garden, lawn, or landscape begins with a soil test. Soil tests provide specific fertilizer recommendations for your lawn and garden and can help you avoid over-application of fertilizer. Most basic soil tests include analysis and recommendations for pH, phosphorous, potassium, and organic matter. Nitrogen recommendations are calculated by a combination of organic matter levels, soil type, and the crop to be grown.

The label on a fertilizer bag has three numbers indicating the percentage (by weight) of the three nutrients most essential to healthy lawns and gardens. Nitrogen (N) is always listed first, followed by phosphate (P₂O₅), which supplies phosphorus, and potash (K₂O), which supplies potassium. Therefore, a 25 lb. bag of 25-4-5 fertilizer contains 25% (6.25 lbs.) nitrogen, 4% (1 lb.) phosphate, and 5% (1.24 lbs.) potash. The remainder is made of ingredients such as sand or ground limestone. Most organic fertilizers contain relatively low concentrations of plant nutrients compared to synthetic fertilizers, and release nutrients more slowly. Slow-release fertilizers provide a lower concentration of nutrients over a longer period of time. Fast-release fertilizers do the opposite.

On heavy (clay) or compacted soils, fast release fertilizers are better than slow release fertilizers. The longer a fertilizer granule remains undissolved, the greater the chances of it being washed into waterways. On sandy soils, however, nitrogen can leach through the soil into the groundwater. On these soils, slow release nitrogen is preferred. Slow release nitrogen sources provide soluble nitrogen over a period of time so there is not a large concentration of nitrogen available for leaching.

For lawn fertilization, the first nitrogen application should occur in late May, not early May. Early application of nitrogen can cause shallow root growth at the expense of fast vegetative growth resulting in more mowing and a weaker root system. One suggestion is to use the holiday schedule of applying one pound per thousand square feet of nitrogen at Memorial Day, July 4, Labor Day, and late fall around Halloween. If you only want to make one fertilizer application, it is recommended to do the application in the fall. This will promote healthy roots for winter and allow the lawn to get off to a good start in spring.

The nutrient requirements for garden plants vary. In general, nitrogen promotes leafy top growth; phosphorus is used for root development; and potassium is necessary for winter hardiness, disease resistance, and general plant durability. Perennial plants such as rhubarb and asparagus will require more phosphorus and potassium as they need to overwinter. Legumes such as peas and beans fix their own nitrogen and usually don't need additional nitrogen. University of Wisconsin – Madison Extension publication A2304 Garden Fertilization provides guidance on fertilizing gardens and landscapes.

In general, trees and shrubs should be fertilized when they are dormant, in late fall or early spring. Fertilizing too early in the fall stimulates growth that might be killed in winter, providing an entrance for insects and disease organisms. Similarly, fertilizing in late spring stimulates growth that depletes stored food supplies and weakens the plant. If trees and shrubs are stressed by environmental conditions, fertilizer should be applied in June.

By understanding the fertility needs of your plants and applying the correct amount and form of nutrients, your garden and landscape will be happy and healthy.